

STATEMENT OF WORK

FIN ASSY, CONICAL
Mk 83 MOD 1

Prepared by:

COMMANDER
NAVAL AIR WARFARE CENTER, WEAPONS DIVISION (NAWCWD)
CODE 478100E
575 I AVE, SUITE 1
POINT MUGU, CA 93042-5049

COMMANDER
NAVAL SURFACE WARFARE CENTER (NSWC), CORONA DIVISION
CODE QA 10
P.O. BOX 5000
CORONA, CA 92878-5000

STATEMENT OF WORK
CHANGE RECORD

<u>Description of Change</u>	<u>SOW Paragraphs</u>	<u>Date</u>
SOW Baseline	All	29 May 2002
Removed Signature Line	Title Page	29 January 2003
Added Addresses	Title Page	29 January 2003
Modified Lot Acceptance Test	3.6.2	29 January 2004

1.0 PURPOSE AND SCOPE

1.1 Purpose. This statement of work (SOW) defines the effort required for the fabrication, test, inspection, and delivery of the Mk 83, Mod 1 Conical Fin Assembly (NSN 1325-01-458-5888). For the purpose of this SOW, the "Contracting Officer" or "Contracting Office" is the U.S. Army, Code HQ OSC, AMSOS-CCM-F, Rock Island, IL 61299-6000. The Designated Technical Activity (DTA) for the MK 83 is the U.S. Navy, Naval Air Warfare Center, Weapons Division (Code 478100E), Pt. Mugu, CA 93042-5049. The government procuring activity consists of the contracting office, the DTA, and/or their designated representatives. Any or all subcontracted parties subject to the provisions of this document shall hereafter be referred to as the "Contractor".

1.2 Scope. This SOW is applicable to the Contractor's tasks and data requirements to support test, inspection, and production to satisfy the requirements of the U.S. Navy Automated Data List (ADL) 923AS400, Top Assembly Drawing 923AS400 and sub tier drawings. The Contractor is responsible for the flow down of all applicable requirements to sub tier suppliers and for documentation of their compliance to these requirements.

2.0 APPLICABLE DOCUMENTS

2.1 Order of Precedence. In the performance of this contract, the Contractor shall comply with the following documents. In the event of conflict between the following documents and any other compliance document, the order of precedence shall be as follows:

- 1) Solicitation, Offer and Award issued by the Contracting Officer
- 2) The requirements of this SOW and Section J attachments

2.2 Compliance Documents. The following documents form a part of this SOW:

- 1) Automated Data List (ADL)
- 2) Drawings and Specifications
- 3) Quality Assurance Provisions (QAP)

2.3 Specifications and Standards. The list of military, industry, and other government standards and specifications that are applicable to satisfy the requirements of this SOW and the Contract issued by the Contracting Officer is contained in ADL 923AS400. The ADL is a comprehensive list of documents generated from the Drawings, Specifications, Contract Data Requirements List (CDRL), Acceptance Inspection Equipment (AIE) Requirements and QAP.

3.0 REQUIREMENTS

3.1 General Requirements.

3.1.1 General. The Contractor shall perform the tasks identified herein and shall provide access to facilities and data to the Contracting Officer and Navy personnel as necessary to monitor and evaluate conformance to requirements specified herein. The Contractor shall provide manpower, material, equipment, facilities and expertise to satisfy all the requirements of this SOW.

3.1.2 Contract Management. The Contracting Officer will be responsible for all contracting activities. No conversation, recommendation, or direction, whether given directly or implied by Government personnel that will affect the scope, schedule, or price of the tasks covered by this SOW shall be acted upon by the Contractor unless specifically directed in writing by the Contracting Officer. All technical or management meetings held during the performance of this contract, attended by Government and Contractor personnel, shall be subject to this condition. The Contractor agrees that no request for equitable adjustment or claim for altering the terms and conditions of the contract shall be submitted based on the results of said meeting unless the Contracting Officer has authorized that change to the contract in writing.

3.1.3 Meetings. At the Government's discretion, the parties shall convene, at a pre-determined location, to review and discuss: technical issues, quality issues, scheduled performance, problems areas, and recommended corrective actions. The Contractor shall be required to provide appropriate representation and documentation in support of the Government's agenda. The Government reserves the right to convene up to ten (10) meetings during the life of the basic contract, and up to six (6) additional meetings if an option provision is exercised.

3.1.4 Data Deliverables. The type of data required shall be "Regular" or "Reproducible" as described below. Required data and distribution are defined in the CDRL.

3.1.4.1 Regular: Data shall be black on white copies capable of producing legible copies, when re-produced on reproduction equipment.

3.1.4.2 Reproducible: May be hard copy capable of producing legible copies when re-produced on reproduction equipment, or electronic copy in government compatible format (Microsoft Office 97, Adobe Acrobat 3.0 or higher versions) on a 3.5 diskette or compact disc.

3.1.4.3 For drawings, submit original AutoCAD Rev. 13 or higher, plus a view file of .C4 (CALS Group 4) format.

3.2 Detailed Requirements.

3.2.1 Quality System Plan (QSP)/Inspection Test Plan (ITP). The QSP/ITP shall be in accordance with the contract quality system requirements and the QAP. The QSP shall document the contractor's implementation of a quality system in accordance with ANSI/ASQC-9002-1994 as supplemented by the QAP, and the QSP/ITP shall be prepared in accordance with the format specified in the QAP. The QSP/ITP shall be submitted in accordance with the CDRL.

3.2.2 Statistical Process Control (SPC) Program Plan. A SPC program shall be implemented in accordance with contract requirements and the QAP. The plan(s) shall be submitted in accordance with the CDRL.

3.2.3 Acceptance Inspection Equipment (AIE) including Standard Measuring Instruments (SMI).

- 1) AIE design documentation shall include operating instructions and sufficient design information to permit evaluation of the proposed equipment's ability to test or measure the required characteristics with accuracy and repeatability. The designs must include sufficient summary data to correlate each drawing (and revision thereof) with the applicable product, drawing, revision number and characteristics inspected. All documentation (AIE designs, SMI and operating instructions) shall require approval prior to the commencement of the First Article Test. The Contracting Office will either approve or disapprove the Contractor's AIE documentation within (30 calendar days for Purchase Orders, and 45 calendar days for contracts) of receipt thereof. When approved, such designs shall become Government property.
- 2) All documentation (AIE designs, SMI and operating instructions) for those inspection characteristics classified as "Minor" shall be submitted in accordance with the CDRL and AIE Requirements. Disposition of "Minor" AIE designs, SMI, and operating instructions will be provided by the QAR.
- 3) All documentation (AIE designs, SMI and operating instructions) for those inspection characteristics classified as "Critical" or "Major" shall be submitted in accordance with the CDRL and AIE Requirements. Disposition of "Critical" and "Major" AIE designs, SMI, and operating instructions will be provided by the Contracting Office.
- 4) Measuring devices (contractor in-process work gages, fixtures etc.), when used for gathering Statistical Process Control (SPC) data, when SPC is the means of product acceptance, require Government approval and shall be submitted in accordance with the AIE Requirements.
- 5) The Contractor is responsible for the proper storage, handling, and use of all AIE. Non-conforming production items which are passed by damaged or misused AIE will not be accepted by the Government and does not relieve the Contractor of the responsibility to meet all drawing/specification requirements of the contract.
- 6) The Contractor shall provide all AIE necessary to assure conformance of components and end items to contract requirements. All AIE are subject to approval by the Contracting Office.
- 7) The Contractor shall be responsible for any delays resulting from late presentation of AIE or AIE design documentation for Contracting Office approval, and any delays resulting from the presentation of inadequate or defective AIE or AIE design documentation.
- 8) The Contractor is not authorized to change approved AIE without approval of the government procuring activity. The Contractor shall be responsible for costs and schedule delays associated with Contractor initiated changes, which have not been approved by the Contracting Office, including costs incurred by the Government.

3.2.4 Materials, Design and Construction. Materials, design and construction shall be in accordance with the requirements as defined by the contract or purchase order. The contractor shall demonstrate by means of certification that only materials and components conforming to the contract or purchase order requirements have been used. Certification statements shall

completely identify the material or component, indicate the specification or drawing (revisions and dates) applicable, the grade or type to which the material or components were tested, the number tested and quantitative requirements and results obtained during tests. The required data may be from the specific quantity of material or components used in the contract or from the manufacturing lot from which the material or components originated.

3.2.5 First Article Test (FAT). Unless otherwise specified in the contract or purchase order, the first article sample shall be inspected and tested in accordance with the examination and test requirements as specified herein. Unless otherwise specified in the contract or purchase order, the examinations and tests shall be performed by the contractor under the observation of the QAR. The first article inspection results will then be verified by the government procuring activity for conformance to contract or purchase order requirements.

3.2.5.1 First Article Sample: Prior to the start of regular production, the contractor shall manufacture and submit a first article sample using the methods and processes proposed for quantity production. The first article sample shall conform to all requirements specified by the contract or purchase order (e.g., the ADL, all drawings and related specifications and standards). The first article sample shall consist of:

- 1) Three (3) fin assemblies, per drawing 923AS400 (i.e., completely assembled, treated and painted).
- 2) Three (3) fin assemblies unpainted (i.e., three assemblies completely assembled, per drawing 923AS400, but unpainted).
- 3) Three (3) complete sets of component parts and subassemblies for the fin assembly.
- 4) Powder Coating tests per WSD-C-0181.
- 5) Destructive test samples for Government First Article Verification Test as defined below.

3.2.5.1.1 Additional First Article Samples: Additional first article samples may be required by the Contracting Officer as the result of a first article sample failing to meet the contract requirements. Additional first article samples required as a result of first article failure shall be supplied by the contractor at his own expense.

3.2.5.1.2 Disposition of First Article Sample: All First Article Samples shall be identified, segregated, and retained at the contractor's plant and made available to the government representative, upon request, for the duration of the contract. Final disposition of First Article Sample will be provided prior to contract completion. First Article destructive test specimens shall be dispositioned in accordance with requirements herein.

3.2.5.2 First Article Inspections and Tests: Prior to the submission of the first article sample for verification by the cognizant government procuring activity, the contractor shall inspect and test the first article sample to assure that it conforms to all the requirements of the contract or purchase order. The contractor performed first article tests and inspections shall be witnessed by the QAR, as directed by the contracting office. The first article sample shall conform to all drawing requirements and be accompanied by inspection results as well as certified test reports required by contract or purchase order. Each sample shall be subjected by the contractor to all examinations and tests required by the contract or purchase order, using approved inspection and test plan(s). The contractor shall prepare and provide documentation with the first article sample identifying all inspections and tests performed and their results. This documentation

along with first article sample will be verified by the cognizant government procuring activity to determine compliance to contract or purchase order requirements.

Destructive testing required for FAT will be performed by the contractor during the Government First Article Verification.

3.2.5.3 Government First Article Verification: First article verification shall consist of first article test and inspections performed by the contractor and/or government procuring activity and witnessed by the government procuring activity at the contractor's facility. During the government procuring activity first article verification, the contractor's gauges and other measuring and test devices necessary to assure that supplies conform to the contract or purchase order requirements will also be reviewed. The government procuring activity reserves the right to perform any of the inspections set forth in the contract or purchase order requirements as necessary to assure supplies conform to these requirements. This shall include but not be limited to the use of government operated inspection laboratories. The contractor's measuring and test equipment shall be made available for use by the government representatives to determine conformance to contract or purchase order requirements. In addition, contractor's personnel shall be made available for operation of such devices and for verification of their accuracy.

3.2.5.3.1 The government first article verification shall consist of:

- 1) Reinspection of all critical and major dimensional inspection characteristics, and selected other dimensional characteristics.
- 2) Visual inspection, liquid penetrant inspection, radiograph inspection, mechanical (e.g., shear) testing, and metallographic inspection as required per drawings and specifications. Certifications and test results will be reviewed if these inspections are performed by supplier.
- 3) Destructive testing as defined below.

3.2.5.3.2 In addition to the first article test requirements stated above, the following additional tests are required. First article destructive tests shall be performed by the contractor and witnessed by government procuring activity personnel on five (5) additional fully assembled, but unpainted, bomb fin assemblies (P/N 923AS400). The destructive tests are limited to the weld types and locations as specified herein.

1) Conical Fin Skin (P/N 923AS401) to Ring Adapter (P/N 1252607) Butt Weld.

- (a) A butt joint weld tensile test shall be performed on three (3) specimens sectioned from each of five (5) fully assembled, but unpainted, bomb fin assemblies (P/N 923AS400). The three test specimens shall be sectioned from around the periphery of each bomb fin assembly a minimum of 90 degrees apart. Figure 1 describes the size, quantity, location and method of sectioning the test specimens. A test fixture (Figures 2a, 2b, 2c, and 2d or equivalent) shall be fabricated to test the specimens.
- (b) Each specimen shall be subjected to a tensile test at a pull rate of 0.5 inches/minute performed at room temperature and no greater than 50 percent relative humidity as illustrated in Figure 3. Failure of any one (1) out of fifteen (15) weld specimens to

meet a weld strength of 2600 pounds-force per linear inch of weld shall be cause for rejection. A weld failure is classified as a weld that would fail in tension within the weld bead itself or does not meet the required weld strength of 2600 pounds-force per linear inch of weld.

2) Conical Fin Skin (P/N 923AS401) Seam Weld.

- (a) A seam weld shear test shall be performed on two (2) test specimens sectioned from each of five (5) fully assembled, but unpainted, bomb fin assemblies (P/N 923AS400). The two (2) test specimens shall be sectioned as close to the adapter ring (P/N 1252607) butt joint weld as possible. Figure 4 describes the size, quantity, location and method of sectioning the test specimens. A test fixture (Figures 5a and 5b or equivalent) shall be fabricated to test the specimens.
- (b) Each specimen shall be subjected to a shear test at a pull rate of 0.5 inches/minute performed at room temperature and no greater than 50 percent relative humidity as illustrated in Figure 6. Failure of any one (1) out of ten (10) weld specimens to meet a weld strength of 2600 pounds-force per linear inch of weld shall be cause for rejection. A weld failure is classified as a weld that would fail in shear within the weld zone itself or does not meet the required strength of 2600 pounds-force per linear inch of weld.

3) Test Records. The contractor shall prepare and make available to the government representatives, accurate and complete records of all destructive test results. All destructive test records shall be maintained on file at the contractor's plant for the duration of the contract. The test records shall contain, as a minimum, the following information:

- (a) Contract Order No.
- (b) Drawing and Specification Numbers/Revision Letter.
- (c) Nomenclature of Item(s) Tested.
- (d) Number of Specimens Tested.
- (e) Identification of First Article Specimens.
- (f) Sample Size.
- (g) Date of Test.
- (h) Description and Quantity of Defects (Failures) Found.
- (i) Conformance/Non-conformance Criteria.
- (j) Failure Load of Each Specimen Tested (Pounds).
- (k) Pull Rate Utilized (Shall be 0.5 inches/minute).

4) Test Specimens. The contractor shall identify (tag or mark) each test specimen by contract number, and location from where the specimen was taken. All test specimens shall be retained at the contractor's plant and made available to the government representative, upon request, for the duration of the contract. All tested specimens and test records shall become the property of the government.

3.2.5.3.3 Certifications: The contractors certifications shall be reviewed for conformance to drawings, specification and contract or purchase order requirements.

3.2.5.3.4 Process Controls: The process controls and procedures of the contractor's manufacturing and inspection system will be reviewed for conformance to specifications and contract or purchase order requirements.

3.2.5.4 Acceptance of First Article Sample: If the first article sample passes the criteria established in the examinations and tests, and verification, it will be approved. If the first article sample fails any of the specified examinations and tests, the results will be evaluated by the government procuring activity. These results, together with the government engineering analysis of the first article sample, shall form the basis for corrective action by the contractor. Depending upon the degree of corrective action deemed necessary by the government, first article approval may be:

- 1) Granted, in which case the contractor shall have first made the changes required by the government prior to the start of regular production.
- 2) Withheld, and new sample shall be submitted for approval in place of the failed first article sample. The sample shall be subjected to the examinations and tests in which the failures occurred and any other examinations and tests of the first article inspection as required by the Contracting Officer.
- 3) Withheld, and a new first article sample shall be submitted for approval.

In all cases the contractor shall comply with the required changes which are within the scope of the contract requirements to the satisfaction of the government procuring activity for future production.

3.2.5.4.1 Until the first article sample is approved, further production shall be at the risk of the contractor. The government will not proceed with test and inspection of the production lots until first article approval is granted.

3.2.5.4.2 Reinstitution of Tests: Acceptance of first article sample shall not relieve the contractor from meeting all contract requirements throughout the life of the contract or purchase order. When evidence shows failure to continue to meet the first article inspection requirements specified herein, the government reserves the right to require tightened inspection on a lot basis, consisting of the reinstitution of such portions of the first article inspection needed to verify the effectiveness of any corrective action.

3.2.5.4.3 Supplemental First Article Inspection or Test: An additional first article sample or portion thereof may be required by the Contracting Officer in writing when:

- 1) A major change is made to the technical data package.
- 2) Whenever there is lapse in production for period in excess of ninety (90) days.
- 3) Whenever a change occurs in the manufacturing process, material used, drawings, specification, source of supply, process location or inspection processes being performed.

When one of conditions above occur, the government procuring activity shall be notified, in writing. Written approval from the government procuring activity shall be required prior to the implementation of any of the aforementioned scenarios. Costs of the first article inspection resulting from conditions above shall be borne by the contractor.

3.2.6 Lot Acceptance Test and Inspection (LAT). Lot acceptance testing shall be conducted by the contractor and/or QAR and witnessed the QAR. Lot acceptance inspection and testing shall be conducted in accordance with the inspection and test requirements of the QAP and the approved ITP.

3.2.6.1 Lot Acceptance will be conducted on a lot size no greater than one week's production, but not less than one day's production.

3.2.6.2 Lot Acceptance Destructive Test and Acceptance Criteria. Production lot destructive tests shall be performed by the contractor and/or QAR and witnessed by QAR on one (1) fully assembled Bomb Fin Assembly (P/N 923AS400). The fin assembly shall be randomly selected by QAR from each production lot. The destructive tests are limited to the weld types and locations as specified herein.

1) Conical Fin Skin (P/N 923AS401) to Ring Adapter (P/N 1252607) Butt Weld.

- (a) A butt joint weld tensile test shall be performed on three (3) specimens sectioned from the fully assembled, but unpainted, bomb fin assembly (P/N 923AS400). The three test specimens shall be sectioned from around the periphery of each bomb fin assembly a minimum of 90 degrees apart. Figure 1 describes the size, quantity, location and method of sectioning the test specimens. A test fixture (Figures 2a, 2b, 2c, and 2d or equivalent) shall be fabricated to test the specimens.
- (b) Each specimen shall be subjected to a tensile test at a pull rate of 0.5 inches/minute performed at room temperature and no greater than 50 percent relative humidity as illustrated in Figure 3. Failure of any one (1) weld specimen to meet a weld strength of 2600 pounds-force per linear inch of weld shall be cause for rejection. A weld failure is classified as a weld that would fail in tension within the weld bead itself or does not meet the required weld strength of 2600 pounds-force per linear inch of weld.

2) Conical Fin Skin (P/N 923AS401) Seam Weld.

- (a) A seam weld shear test shall be performed on two (2) test specimens sectioned from the fully assembled, but unpainted, bomb fin assembly (P/N 923AS400). The two (2) test specimens shall be sectioned as close to the adapter ring (P/N 1252607) butt joint weld as possible. Figure 4 describes the size, quantity, location and method of sectioning the test specimens. A test fixture (Figures 5a and 5b or equivalent) shall be fabricated to test the specimens.
- (b) Each specimen shall be subjected to a shear test at a pull rate of 0.5 inches/minute performed at room temperature and no greater than 50 percent relative humidity as illustrated in Figure 6. Failure of any one (1) weld specimen to meet a weld strength of 2600 pounds-force per linear inch of weld shall be cause for rejection.

A weld failure is classified as a weld that would fail in shear within the weld zone itself or does not meet the required strength of 2600 pounds-force per linear inch of weld.

- 3) Test Records. The contractor shall prepare and make available to the government representatives, accurate and complete records of all destructive test results. All destructive test records shall be maintained on file at the contractor's plant for the duration of the contract. The test records shall contain, as a minimum, the following information:
- (a) Contract Order No.
 - (b) Drawing and Specification Numbers/Revision Letter.
 - (c) Nomenclature of Item(s) Tested.
 - (d) Number of Specimens Tested.
 - (e) Identification of Production Lot Acceptance Specimens.
 - (f) Sample Size.
 - (g) Date of Test.
 - (h) Description and Quantity of Defects (Failures) Found.
 - (i) Conformance/Non-conformance Criteria.
 - (j) Failure Load of Each Specimen Tested (Pounds).
 - (k) Pull Rate Utilized (Shall be 0.5 inches/minute).
 - (l) Production Lot Number and Size
- 4) Test Specimens. The contractor shall identify (tag or mark) each test specimen by contract number, and location from where the specimen was taken. All test specimens shall be retained at the contractor's plant and made available to the government representative, upon request, for the duration of the contract. All tested specimens and test records shall become the property of the government.

3.2.6.3 Should a failure occur during lot acceptance, the contractor shall immediately notify, via the QAR, the contracting office, prior to any rework and re-inspection or test.

3.2.7 Acceptance Test Reports. At the conclusion of FAT and LAT, the contractor shall prepare test reports in accordance with the DID specified in the CDRL. The Quality Assurance Representative (QAR) will provide disposition on the LAT report.

3.2.8 Failure Analysis and Corrective Action Reporting (FACAR). All failures occurring during FAT or LAT shall be reported in accordance with the DID specified in the CDRL. Disposition of the failure analysis and implemented corrective action will be provided by the Contracting Office.

3.2.9 Engineering Change Proposals (ECPs). All ECPs (Class I and Class II) shall be submitted in accordance with the CDRL.

3.2.9.1 Class II ECP Authority: The Contracting Office shall have Class II approval authority. Class II ECPs shall be approved or disapproved within 30 calendar days of receipt by the Contracting Office.

3.2.10 Deviations. All deviations (major and minor) shall be submitted in accordance with the CDRL.

3.2.10.1 Minor Deviation Authority: The Contracting Office shall have Minor Deviation approval authority. Minor deviations shall be approved or disapproved within 30 calendar days of receipt by the Contracting Office.

3.2.11 Notice of Revision (NOR). The Contractor shall prepare a NOR for each drawing, associated list, or other referenced document which requires revision and submit said NOR with the ECP. The NOR shall be submitted in accordance with the CDRL.

3.2.12 Packaging, Marking, Storage, and Shipment. See applicable ADL for packaging, marking, storage, and shipping requirements.

3.2.13 Ammunition Data Card. Contractor shall prepare Ammunition Data Cards in accordance with MIL-STD-1168 and CDRL requirements (and deliver them with each deliverable lot.) Data cards shall be submitted in accordance with the DID specified in the CDRL. Data cards shall be prepared using a Government furnished computer program (contact Contracting Office for program and user's guide. Point of contact is provided in the CDRL Address List). Submissions consist of sample data cards (ref: MIL-STD-1168, paragraph 4.1.4) and monthly submissions of data disks (see User's Guide).

3.2.14 Production Progress and Delivery Reports. Production Progress and Delivery Report (DD Form 375) shall be prepared with instructions listed thereon.

3.2.15 Ozone Depleting Substances Chemical (ODC) and Ozone Depleting Substances (ODS). Documents containing ozone depleting chemicals (ODC) and ozone depleting substances (ODS) shall be identified as part of the ADL.

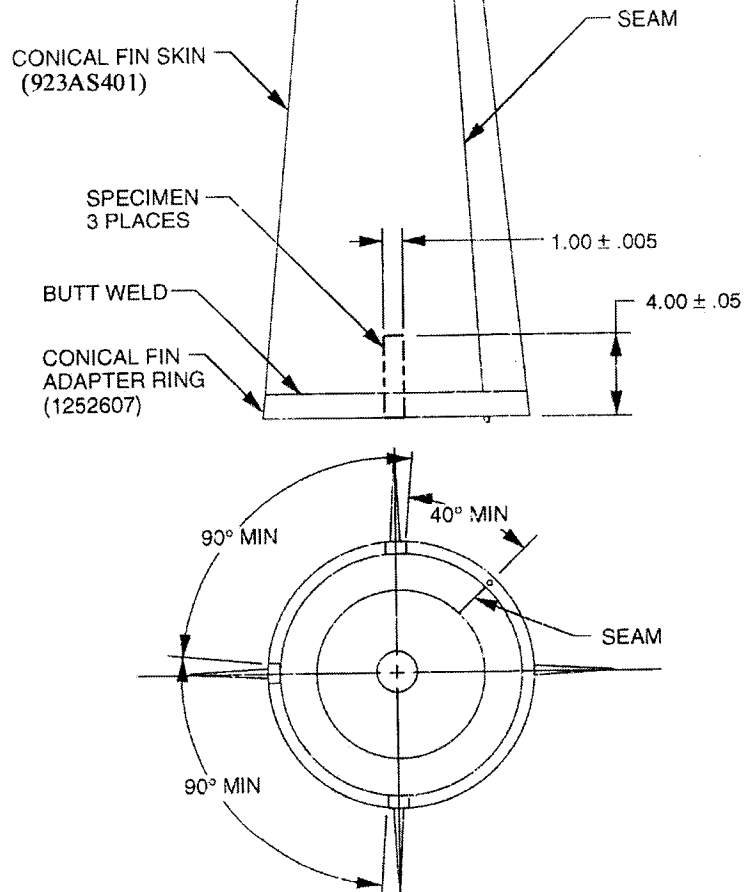


FIGURE 1. Size and location of specimens.

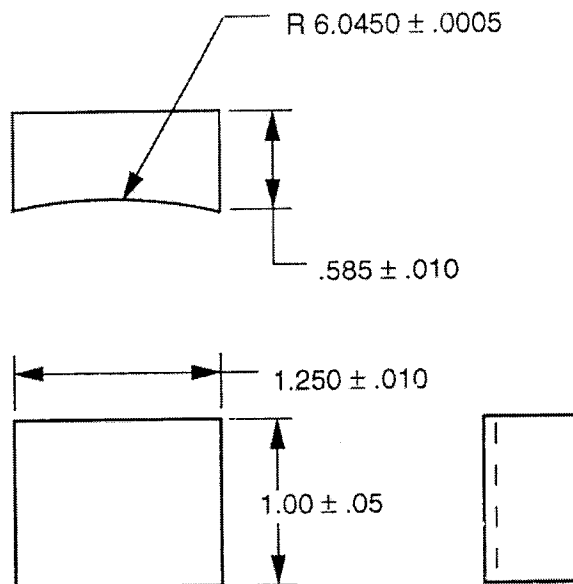


FIGURE 2b. Upper concave inspection fixture pressure pad.

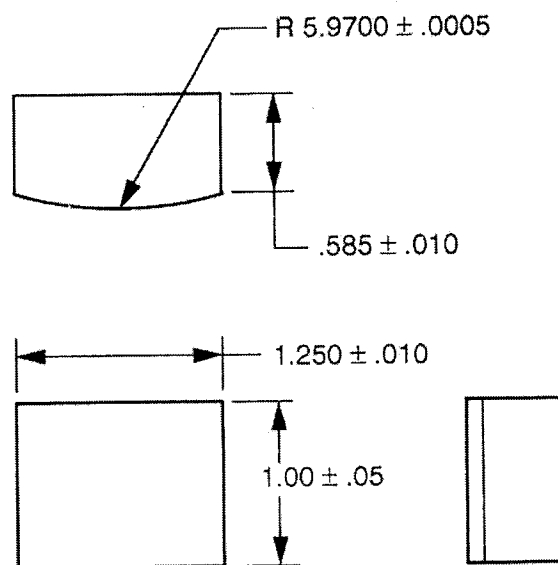


FIGURE 2a. Upper convex inspection fixture pressure pad.

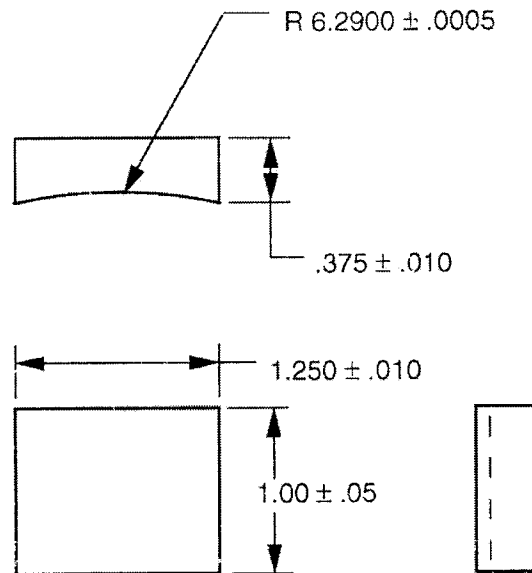


FIGURE 2c. Lower concave inspection fixture pressure pad.

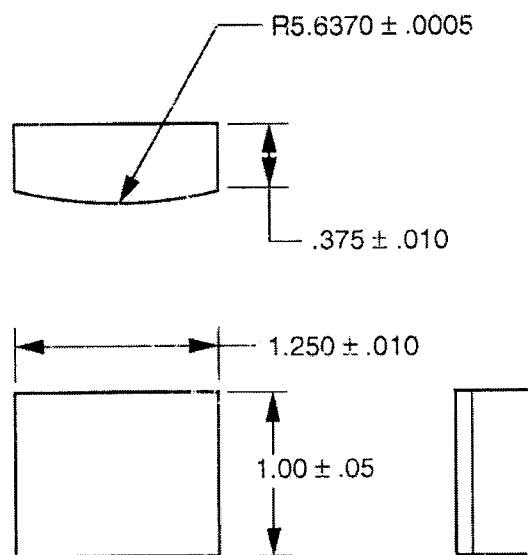


FIGURE 2d. Lower convex inspection fixture pressure pad.

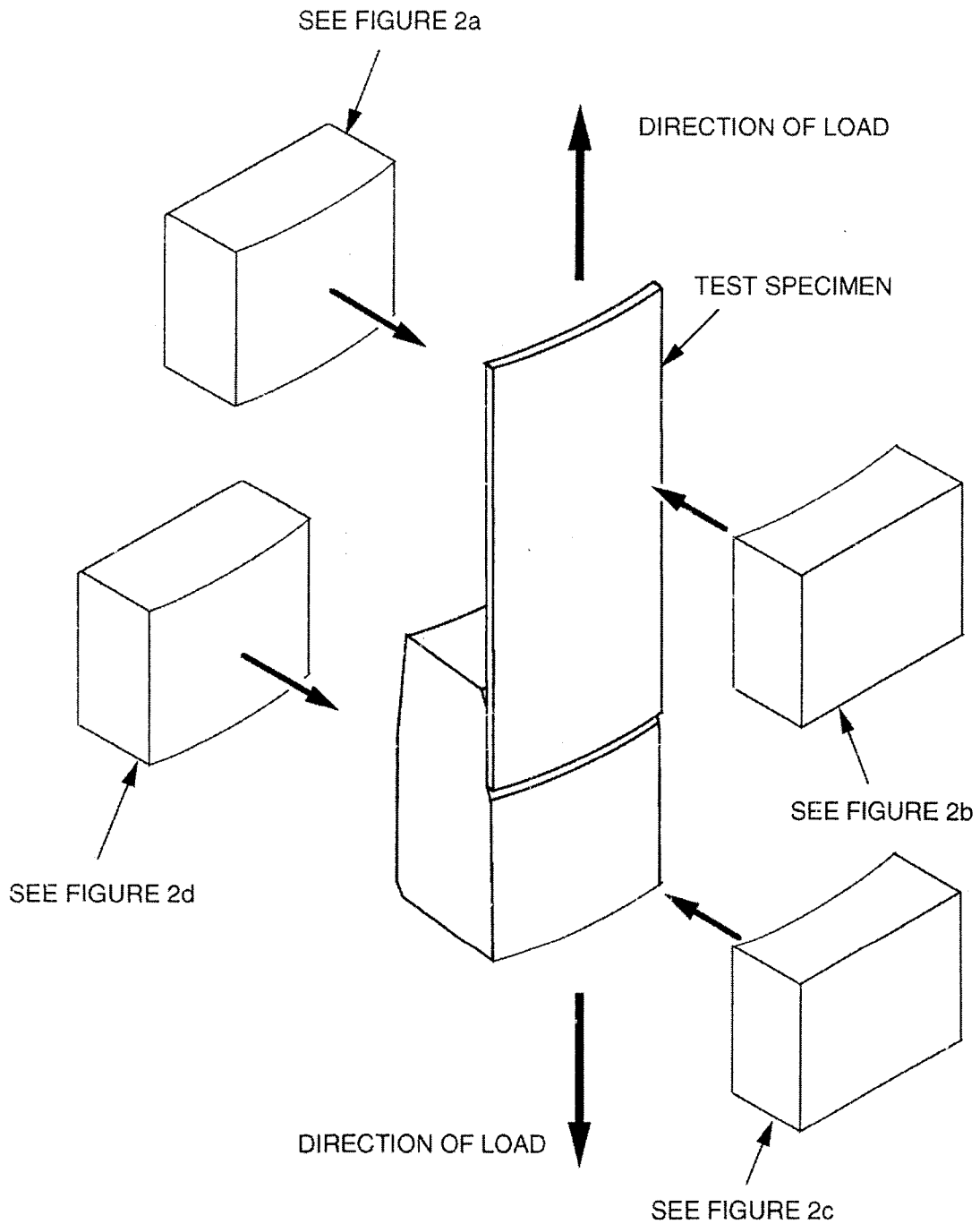


FIGURE 3. Arrangement of inspection fixture components relative to butt weld specimen.

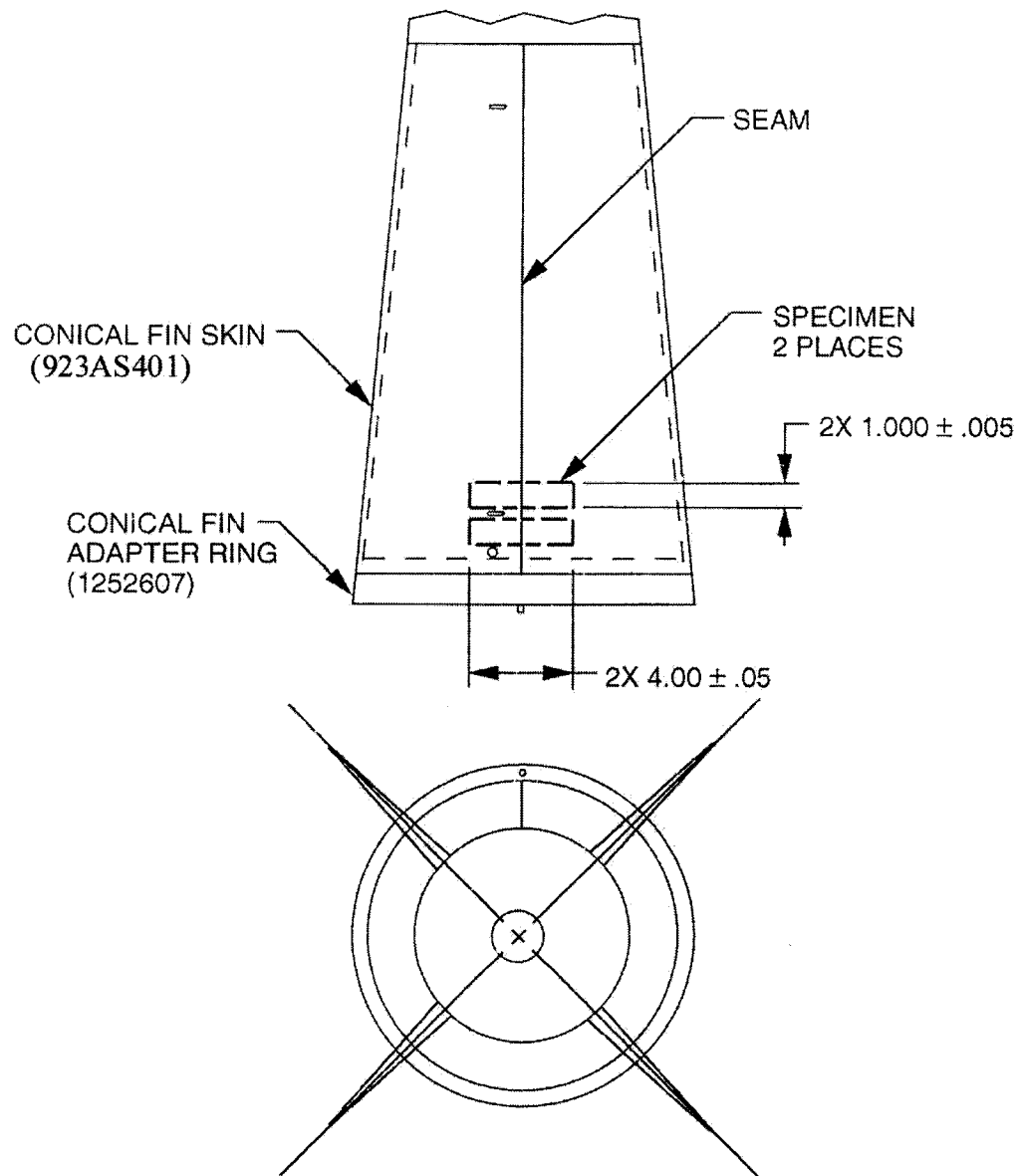


FIGURE 4. Size and location of seam weld specimens.

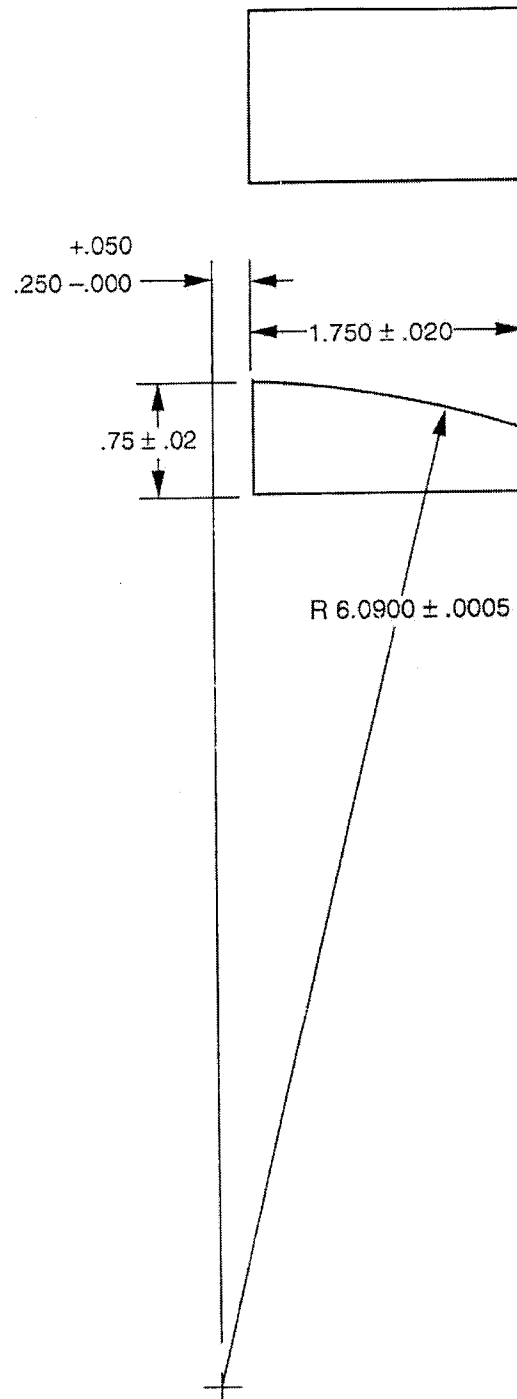


FIGURE 5a. Concave inspection fixture pressure pad. (2 required)

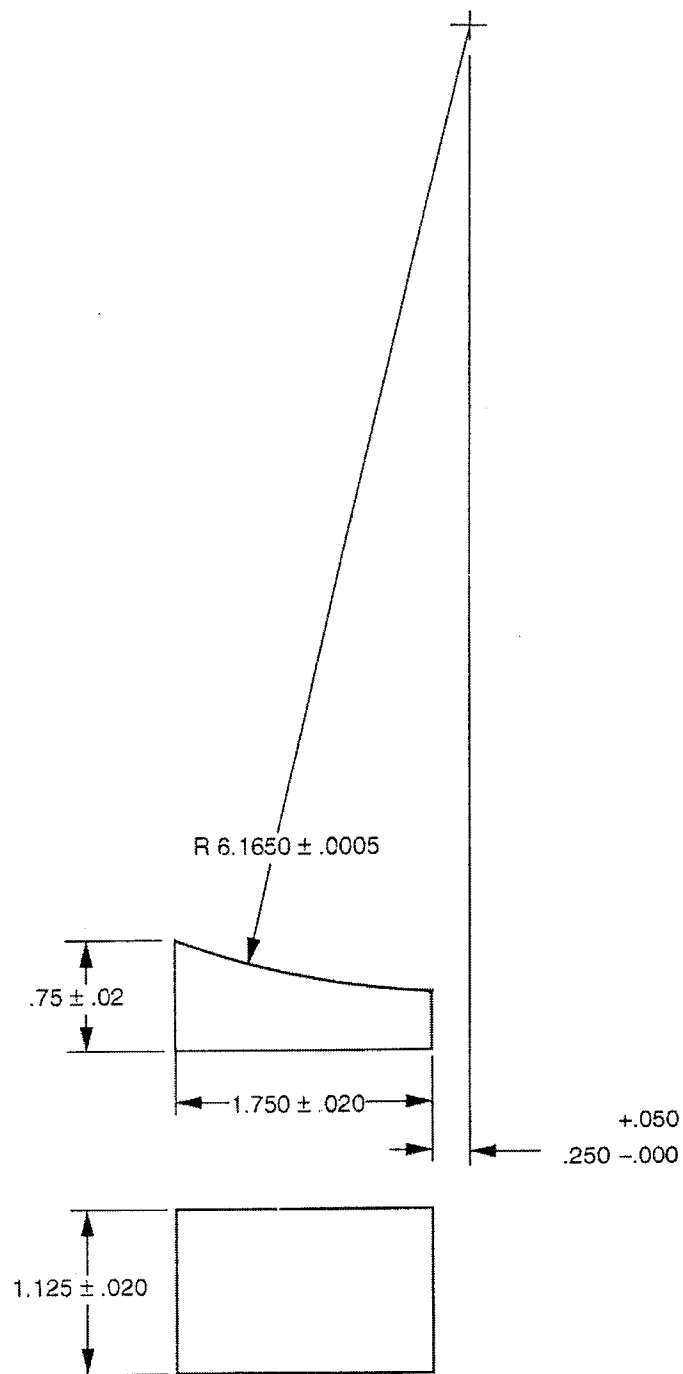


FIGURE 5b. Concave inspection fixture pressure pad. (2 required)

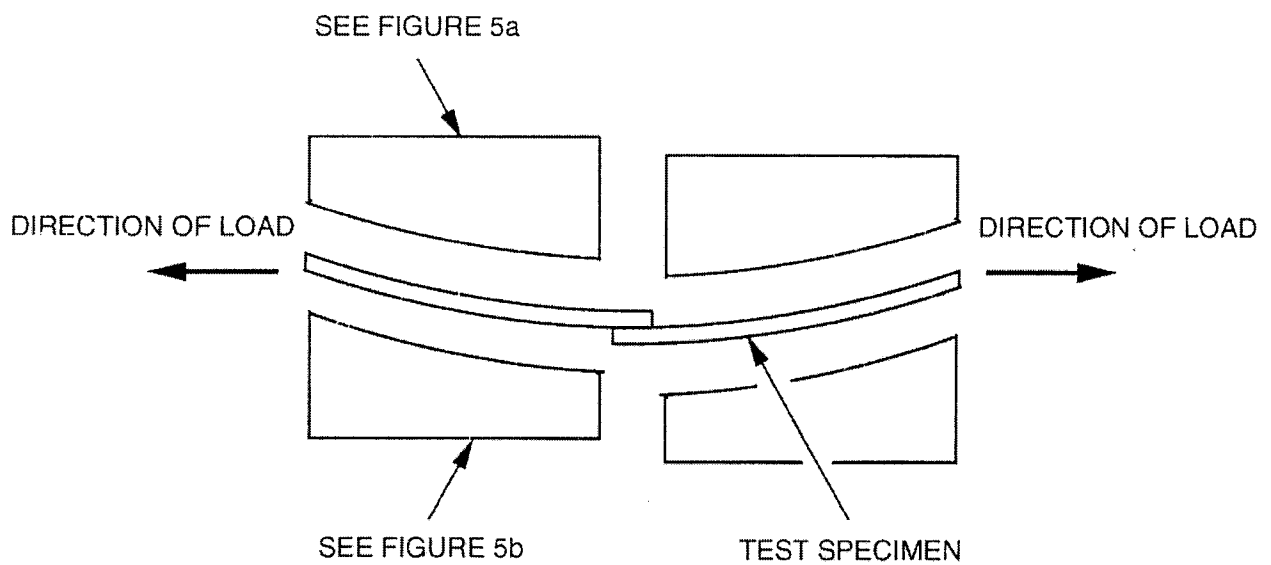


FIGURE 6. Arrangement of inspection fixture components relative to seam weld specimen.